(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification⁷: H04Q 7/22

(21) International Application Number:
PCT/EP2004/008380

(22) International Filing Date: 26 July 2004 (26.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/491,463 31 July 2003 (31.07.2003) US

(71) Applicant (for all designated States except US): KONIN-KLIJKE KPN N.V. [NL/NL]; Maanplein 55, NL-2516 CK The Hague (NL).

(72) Inventors; and
(75) Inventors/Applicants (for US only): GRÜNEBERG, Lutz, Wolfgang [DE/DE]; Blumenhagenstrasse 10, 30167 Hannover (DE). ERGEZINGER, Siegfried [DE/DE]; Nietzschestrasse 38, 40822 Mettmann (DE).

(74) Agent: WUYTS, Koenraad, Maria; Koninklijke KPN N.V., P.O. Box 95321, NL-2509 CH The Hague (NL).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
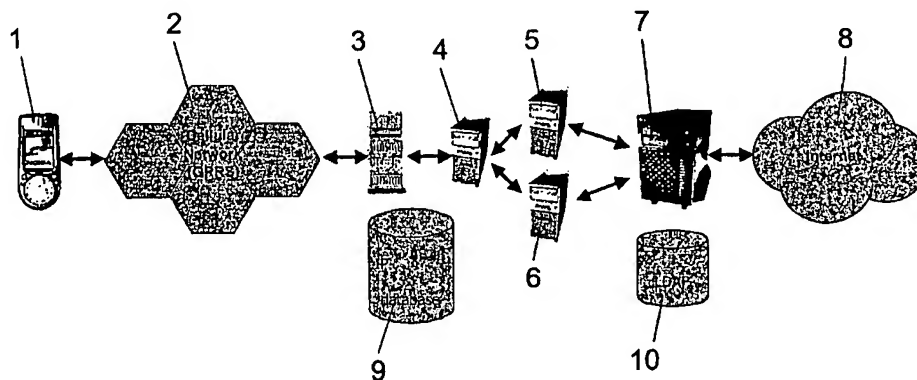
Declaration under Rule 4.17:
— of inventorship (Rule 4.17(iv)) for US only

Published:
— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A METHOD AND SYSTEM TO ENABLE EMAIL SERVICES FOR MOBILE DEVICES

(57) Abstract: The invention is a method and a system, which allows the integration of email-enabled devices into a carrier service network without the need for user individual configuration of the devices. A system with an email proxy and a database is provided for handling email requests from a terminal. The network address of the terminal is used to retrieve email configuration settings from the database, whereupon the email proxy is able to communicate with an email server using the retrieved email configuration settings.

.Title

A method and system to enable email services for mobile devices

5   Field of the invention

The present invention relates to email services for devices. More specifically the present invention relates to the integration of email-enabled devices into a carrier service network.

10

Background of the invention

A large number of mobile terminals currently offered to be used in GSM based cellular networks includes features to send and retrieve email using the well defined and

15   established internet protocols SMTP and POP3 over CSD, HSCSD, GPRS and UMTS.

Some Carriers offer email services to their customer base today, which can be used also to send and receive email

20   with mobile terminals. But only a small number of customers are using this service offering.

One important reason for the limited market acceptance is the user individual configuration of the mobile terminal.

25   Without this very technical and error prone configuration it is not possible to send and receive email on a mobile terminal.

To enable POP3/SMTP capable mobile terminals to use email

30   services of a mobile operator, in existing solutions it is required to configure a number of parameters on the mobile terminal. These parameters include:

- For email retrieval:
  - o Name of the email server to receive email from
  - o Username for email retrieval
  - o Password for email retrieval
5   - To send email:
  - o Email address of the sender
  - o Name of the email server to be used for sending email
  - o Username for sending email (if necessary)
10 - o Password for sending email (if necessary)

While some of the parameters are individual only for the mobile operators email service, others are specific for the individual user. This applies for:

15

- Username for email retrieval
- Password for email retrieval
- Email address of the sender
- Username for sending email (if necessary)
20 - Password for sending email (if necessary)

A significant number of parameters are required to be configured individually by the user.

25 The usual solution provided in the mobile operators environment to configure mobile terminals for certain services is named "over the air configuration" (OTA). This means to configure the terminal by sending a short message to the terminal with the individual configuration
30 parameters. Since this message is formatted in special way, the receiving terminal interprets the message as a configuration command.

However, today's terminals usually do not offer the ability
for email parameter configuration over the air. The user is
left alone to configure the terminal as required.
Additionally the service provisioning process of operators

5 usually does not contain this configuration automatically.
Therefore even if the phone can be configured over the air,
the customer must be aware of this and obliged to get the
configuration - which is unlikely in most cases.

10 WO02/49373A2 discloses a method and arrangement for
configuring a mobile telephone. Like with other prior art
it has the disadvantage that it is required to configure
the phone (manually or automatically) before it can be used
by the customer to access the operators mail service.

15 Especially it is required to provide customer particular
data like username, password or personal name. Another
disadvantage is that in case the customer changes, or is
forced to change, a part of his relevant configuration and
individual data (e.g. mail address, username, password,

20 mail server name), it is required to change or refresh the
handset configuration. Yet another disadvantage is that a
handset specific adoption of the service is required.

Problem definition

25 The integration of email-enabled devices into a carrier
service network require user individual configuration of
each individual device, which is disadvantageous.

Aim of the invention

30 The aim of the invention is to allow the integration of
email-enabled devices into a carrier service network
without the need for user individual configuration in the
devices.

Summary of the invention

The invention is a method and a system, which allows the integration of email-enabled devices into a carrier service
5   network without the need for user individual configuration.

According to a first aspect of the invention a system is provided for handling email requests from a terminal. The system comprises an email proxy and a database. The email
10 proxy can be arranged to communicate with the database. The email proxy can be arranged to detect a network address of the terminal and retrieve email configuration settings from the database using the network address of the terminal. This is advantageous because it enables the terminal to
15 access email services without being configured for the email services. The email configuration settings can include a name of the email server, and/or a username and a password for accessing the email server. This advantageously enables the terminal to access email
20 services without being preconfigured with the name of the email server, username and/or password for accessing the email server. It is possible that the email configuration settings further include a full name of a user, and/or an email address of the user. This makes it even possible for
25 the terminal to access email services without being preconfigured with a full name of the user and the email address of the user. The email proxy can be arranged to communicate with an email server using the email configuration settings.
30   The database can comprise a mapping of the network address of the terminal to an identity of a user. This advantageously enables the email configuration settings to be associated with the identity of the user

4

instead of the network address of the terminal. A first
database can comprise the mapping of the network address of
the terminal to the identity of the user. A second database
can comprise the email configuration settings. Using two
5   databases can be advantageous when different parties
supervise the mapping information and the email
configuration settings.

A first email proxy can be used to handle email
requests for retrieving email messages. A second email
10   proxy can be used to handle email requests for sending
email messages.

In a second aspect of the invention an email retrieval
proxy is provided for handling email retrieval requests
15   from a terminal. The email retrieval proxy can be arranged
to detect a network address of the terminal and retrieve
email configuration settings from a database using the
network address of the terminal. The email retrieval proxy
can further be arranged to forward the email retrieval
20   request to an email server using the email configuration
settings, retrieve a requested email message from the email
server and forward the requested email message to the
terminal.

25   In a third aspect of the invention an email sending proxy
is provided for handling email sending requests from a
terminal. The email sending proxy can be arranged to detect
a network address of the terminal and retrieve email
configuration settings from a database using the network
30   address of the terminal. The email sending proxy can
further be arranged to modify the email sending request
using the email configuration settings and forward the

modified email sending request to an email server using the email configuration settings.

In a fourth aspect of the invention a terminal is provided
5   for use with a system as described above. The terminal can be provisioned with default configuration settings for sending or retrieving email messages, with the default configuration settings being the same for mobile terminals within a network. This is advantageous because it enables
10   terminal manufacturers to equip terminals with default values. The mobile terminal can be arranged to send or retrieve email messages using the default configuration settings. This is advantageous because terminal users do not have to configure the terminal.
15

In a fifth aspect of the invention a method is provided for handling email requests from a terminal in an email proxy. The method can comprising the steps of detecting a network address of the terminal, retrieving email configuration
20   settings from a database using the network address of the terminal and/or communicating with an email server using the email configuration settings. The email configuration settings can include a name of the email server and/or a username and a password for accessing the email server. The
25   email configuration settings can further include a full name of a user and/or an email address of the user. The database can comprise a mapping of the network address of the terminal to an identity of a user.

The method can comprise the steps of retrieving from a
30   first database information about the mapping of the network address of the terminal to the identity of the user and/or retrieving from a second database the email configuration settings.

A first email proxy can be used to handle email
requests for retrieving email messages. A second email
proxy can be used to handle email requests for sending
email messages.

5

Brief description of the drawings
        Fig.1 shows an example of a network architecture
comprising the present invention.
        Fig.2 shows an example of the steps for retrieving
10   email messages according to an exemplary embodiment of the
present invention.
        Fig.3 shows an example of the steps for sending email
messages according to an exemplary embodiment of the
present invention.

15

Detailed description of the invention
For the purpose of teaching of the invention, preferred
embodiments of the method and system of the invention are
described in the sequel. It will be apparent to the person
20   skilled in the art that other alternative and equivalent
embodiments of the invention can be conceived and reduced
to practice without departing from the true spirit of the
invention, the scope of the invention being limited only by
the appended claims as finally granted.

25

The invention is a method and a system, which allows the
integration of email-enabled devices into a carrier service
network without the need for user individual configuration.
        The invention is applicable for most mobile operators
30   to set up an attractive and relative simple mail server for
their customers. Not only mail services of the mobile
operator can be used with this system, also other mail
service providers can be used, if the user is willing to

provide the mobile operator with the required data and credentials.

Basically the invention is applicable also for DSL Service Providers and fixed Network ISPs.

5

The invention has the advantage that it increases the usability and convenience for the customer. Additionally it is advantageous for the operator, since the change of a password is usually not integrated into the operator's

10 business processes at a level that will automatically send a configuration SMS or OTA message to the users mobile phone. Only a subset of mobile phones available on the market today, support OTA configuration or SMS configuration for email services, which is a disadvantage

15 for existing solutions.

The invention can be explained as follows:

Mobile Terminal

20 Mobile terminals are equipped with default values for individual mobile operators by the mobile terminal manufacturer. This is common practice in the mobile telecommunications industry. The manufacturer is setting up the mobile terminal with default e-mail parameters for the

25 individual mobile operator. This parameter set comprises on or more of the following items:

- GPRS APN to be used by the individual mobile operator to send and retrieve email;

30 - Mobile operator individual name for the email server to receive email from;

- Mobile Operator individual default username for email retrieval;

- Mobile Operator individual default password for email retrieval;

- Mobile Operator individual email address of the sender;

5 - Mobile Operator individual name for the email server to be used for sending email;

- For sending email, the terminal will be configured to use standard SMTP without further authentication (no SMTP Auth);

10 - Username and password for sending email remain unset.

Network & Service Delivery Platform

The network operator ensures that elements of the individual service platform are available at the IP
15 addresses pre-configured in the handset for sending email (SMTP-Server) and mail retrieval (POP3-Server).

Additionally the mobile operator takes care, that during the communication link establishment conducted by the
20 mobile handset, the individual MSISDN (or another user id) and the associated TCP/IP address leased to the handset are recorded (usually based on a RADIUS protocol request). Therefore the mobile operator is capable to map any active IP address in the named APN to the MSISDN and vice versa.
25

An example of a delivery platform is described by figure 1. In this figure the following elements are shown: handset (1), cellular GPRS network (2), GGSN (3), WAP gateway (4), POP3-proxy for mail retrieval (5), SMTP-proxy for mail
30 sending (6), mail server (7), Internet (8), MSISDN / IP-address translation database (9) and operator LDAP (10).

In figure 1 a user with a POP3/SMTP capable handset is connected over the GSM/GPRS cellular network to the GGSN. TCP connections initiated by the mail user agent on the handset for retrieving mail from the mail server located on

5   the right side of the figure lead over GGSN and WAP gateway. They terminate on the POP3 proxy. TCP connections initiated by the mail user agent on the handset for sending mail using SMTP lead also over GGSN and WAP gateway. They terminate on the SMTP proxy.

10

The MSISDN/IP-Address translation database contains mapping information for all handsets attached to the GPRS network and allows to map the IP address of a handset to it's MSISDN and vice versa.

15

The operator LDAP includes particular information about customers like MSISDN, name of the email server to receive email from, username for email retrieval, password for email retrieval, user's email address for sending mail,

20   name of the email server to be used for sending email, username for sending email (if necessary), password for sending email (if necessary). This information can be accessed by providing the customer's MSISDN.

25   **Retrieving Mail**

At the point in time the mobile terminal user is checking for new email, the mobile terminal will turn to the mobile operators POP3 server. The POP3 server is a non standard server. It takes the requesting IP address, looks up the

30   associated MSISDN and receives the original users username and password from a database or a LDAP directory. Based on this information the POP3 proxy server authenticates the user against the corresponding backend server and retrieves

the mail for the customer from the original server. The
data stream received from the original users mail server is
for-warded to the mobile handset without modifications.

5   An example of the course of steps to retrieve email is
    described by figure 2. In this figure the following
    elements are shown: handset (1), cellular GPRS network (2),
    GGSN (3), WAP gateway (4), POP3-proxy for mail retrieval
    (5), SMTP-proxy for mail sending (6), mail server (7),
10 Internet (8), MSISDN / IP-address translation database (9)
    and operator LDAP (10).

    The following steps are taken to retrieve email.
    101: The mail user agent located on the handset connects to
15   the POP3 proxy, authenticates itself with a predefined
         username and password and finally request the delivery
         of new mail. The authentication by predefined username
         and password does not provide any security. Each
         terminal will use the same username and password.
20   Instead the POP3 proxy server identifies the customer
         by the IP address of his mobile terminal.
    102: The POP3 proxy server uses the IP address used by the
         mobile terminal to lookup the customer's MSISDN from
         the MSISDN/IP address translation database.
25 103: The MSISDN found out with step 2 is used by the POP3
         proxy server in step 3 to look up particular
         information about the customer from the operators
         LDAP: name of the email server to receive email from,
         username for email retrieval, password for email
30   retrieval.
    104: In step 4 this particular information is used by the
         POP3 proxy server to authenticate towards the original
         mail server using the POP3 protocol, instead of the

user. By forwarding the mail retrieval request
received from the handset, the necessary mail messages
are retrieved from the original mail server.

105: The messages are transferred to the POP3 proxy server.

5   106: The POP3 proxy server forwards the retrieved messages
to the handset.

Sending Mail

If a mobile user is going to send email from the mobile
10   terminal, the mobile terminal will turn to the named SMTP
server. This server is modified proxy version too. At the
time of connection establishment, the server will look up
the mobile users MSISDN and will retrieve the users email
address, original SMTP server name, username and password
15   from a database or a LDAP directory. Based on this
information the SMTP proxy will replace the senders email
address in the mail by the original email address of the
mobile user. The so modified mail will be forwarded to the
original SMTP mail server. If authentication is required,
20   the SMTP proxy server will ensure this based on the
original senders email address.

An example of the course of steps to send email is
described by figure 3. In this figure the following
25   elements are shown: handset (1), cellular GPRS network (2),
GGSN (3), WAP gateway (4), POP3-proxy for mail retrieval
(5), SMTP-proxy for mail sending (6), mail server (7),
Internet (8), MSISDN / IP-address translation database (9)
and operator LDAP (10).
30

The following steps are taken to send email.

201. The mail user agent located on the handset connects to
the SMTP proxy and delivers new mail to the SMTP

proxy server. The SMTP proxy server identifies the
customer by his IP address

202. The SMTP proxy server uses the IP address used by the
     mobile terminal to lookup the customer's MSISDN from
     the MSISDN/IP address translation database.

203. The MSISDN found out with step 2 is used by the SMTP
     proxy server in step 3 to look up particular customer
     information from the operators LDAP: name of the
     email server to be used for sending email, username
     for sending email (if necessary), password for sending
     email (if necessary).

204. Step 4 is characterized by a substitution process
     carried out by the SMTP proxy server. This translation
     replaces the default user data included in the mail
     from the handset by user data retrieved from the
     operator LDAP (username, senders e-mail address).

205. In step 5 the particular user information is used by
     the SMTP proxy server to authenticate towards the
     original mail server using the SMTP protocol instead
     of the user (if SMTP Auth is used). Finally the SMTP
     proxy server will forward the email received from the
     handset with applied replacements to the original mail
     server.

206. The SMTP proxy server receives a return message from
     the SMTP server.

207. This return message is forwarded to the handset.

Abbreviations used

5   CSD   Circuit switched Data

    GPRS   Global Packet Radio Service

    GGSN   Gateway GPRS Supporting Node

    HSCSD   High Speed Circuit Switched Data

    IP   Internet Protocol

10 ISP   Internet Service Provider

    LDAP   Lightweight Directory Access Protocol

    MSISDN   Mobile Station ISDN Number

    POP3   Post Office Protocol Version 3

    SMTP   Simple Mail Transfer Protocol

15 TCP   Transmission Control Protocol

    WAP   Wireless Application Protocol

<u>Claims</u>

5   1.   System for handling email requests from a terminal
(1), the system comprising an email proxy (5,6) and a
database (9,10), the email proxy (5,6) being arranged to
communicate with the database (9,10), wherein the email
proxy (5,6) is arranged to detect a network address of the
10   terminal (1) and retrieve email configuration settings from
the database (9,10) using the network address of the
terminal (1), the email proxy (5,6) further being arranged
to communicate with an email server (7) using the email
configuration settings.

15

2.   System according to claim 1, wherein the email
configuration settings include
        a name of the email server (7), and
        a username and a password for accessing the email
20   server (7).

3.   System according to claim 2, wherein the email
configuration settings further include
        a full name of a user, and
25   an email address of the user.

4.   System according to claims 1-3, wherein the database
(9,10) comprises a mapping of the network address of the
terminal (1) to an identity of a user.
30

5.   System according to claim 4, wherein

a first database (9) comprises the mapping of the
network address. of the terminal (1) to the identity of the
user, and

a second database ·(10) comprises the email
5   configuration settings.

6.   . System according to any of the preceding claims,
wherein

a first email proxy (5) is used to handle email
10   requests for retrieving email messages, and

a second email proxy (6) is used to handle email
requests for sending email messages.

7.   Email retrieval proxy (5) for handling email retrieval
15   requests from a terminal (1), the email retrieval proxy (5)
being arranged to detect a network address of the terminal
(1) and retrieve email configuration settings from a   ·…
database (9,10) using the network address of the terminal
(1), the email retrieval proxy (5) further being arranged
20   to forward the email retrieval request to an email server
(7) using the email configuration settings, retrieve a
requested email message from the email server (7) and
forward the requested email message to the terminal (1).

25   8.   Email sending proxy (6) for handling email sending
requests from a terminal (1), the email sending proxy (6)
being arranged to detect a network address of the terminal
(1) and retrieve email configuration settings from a
database (9,10) using the network address of the terminal
30   (1), the email· sending proxy (6) further being arranged to
modify the email sending request using the email
configuration settings and forward the modified email

sending request to an email server (7) using the email
configuration settings.

9.·. A terminal (1) for use with a system of any of the
5   claims 1-6, the terminal (1) being provisioned with default
configuration settings for sending or retrieving email
messages, the default configuration settings being the same
for mobile terminals within a network, wherein the mobile
terminal is arranged to send or retrieve email messages
10 using the default configuration settings.

10. Method for handling email requests from a terminal (1)
in an email proxy (5,6), the method comprising the steps of
        detecting a network address of the terminal (1);
15   retrieving email configuration settings from a
database (9,10) using the network address of the terminal
(1);
        communicating with an email server (7) using the email
configuration settings.
20

11. Method according to claim 10, wherein the email
configuration settings include
        a name of the email server (7), and
        a username and a password for accessing the email
25 server (7).

12. Method according to claim 11, wherein the email
configuration settings further include
        a full name of a user, and
30   an email address of the user.

13. Method according to claims 10-12, wherein the database (9,10) comprises a mapping of the network address of the terminal (1) to an identity of a user.

5   14. Method according to claim 13, the method comprising the steps of

retrieving from a first database (9) information about the mapping of the network address of the terminal (1) to the identity of the user;

10   retrieving from a second database (10) the email configuration settings.

15. Method according to any of the claims 10-14, wherein a first email proxy (5) is used to handle email

15 requests for retrieving email messages, and a second email proxy (6) is used to handle email requests for sending email messages.
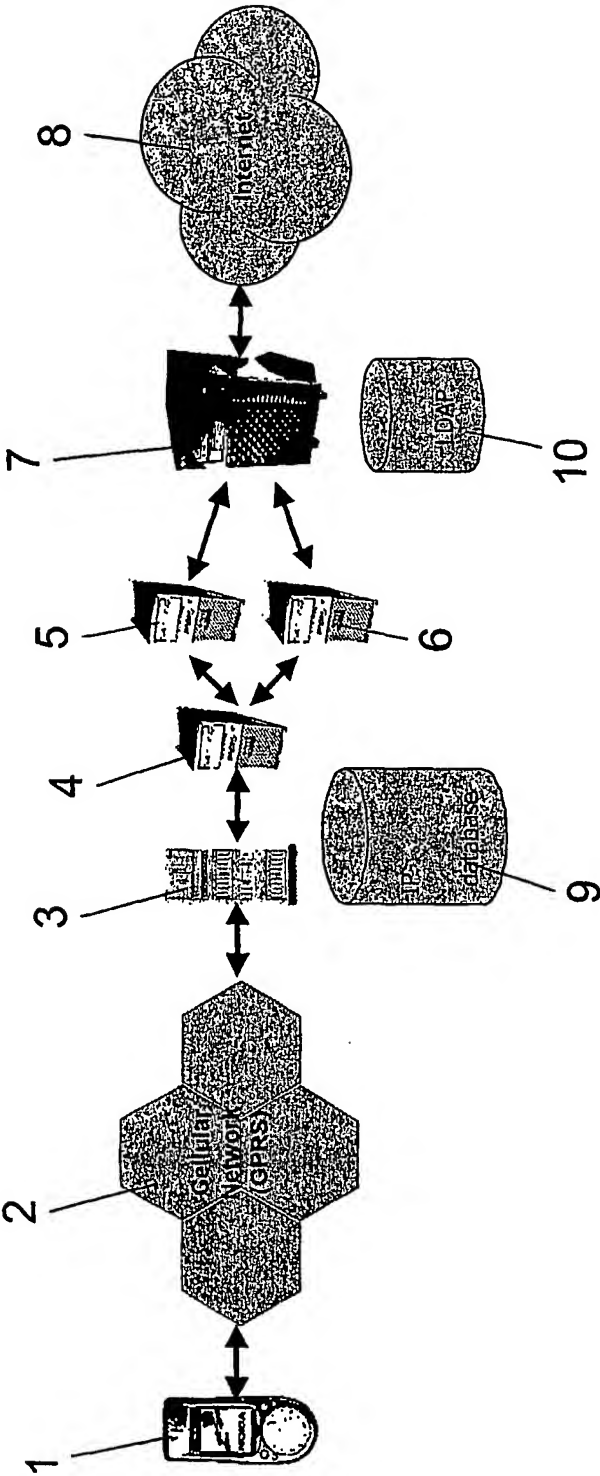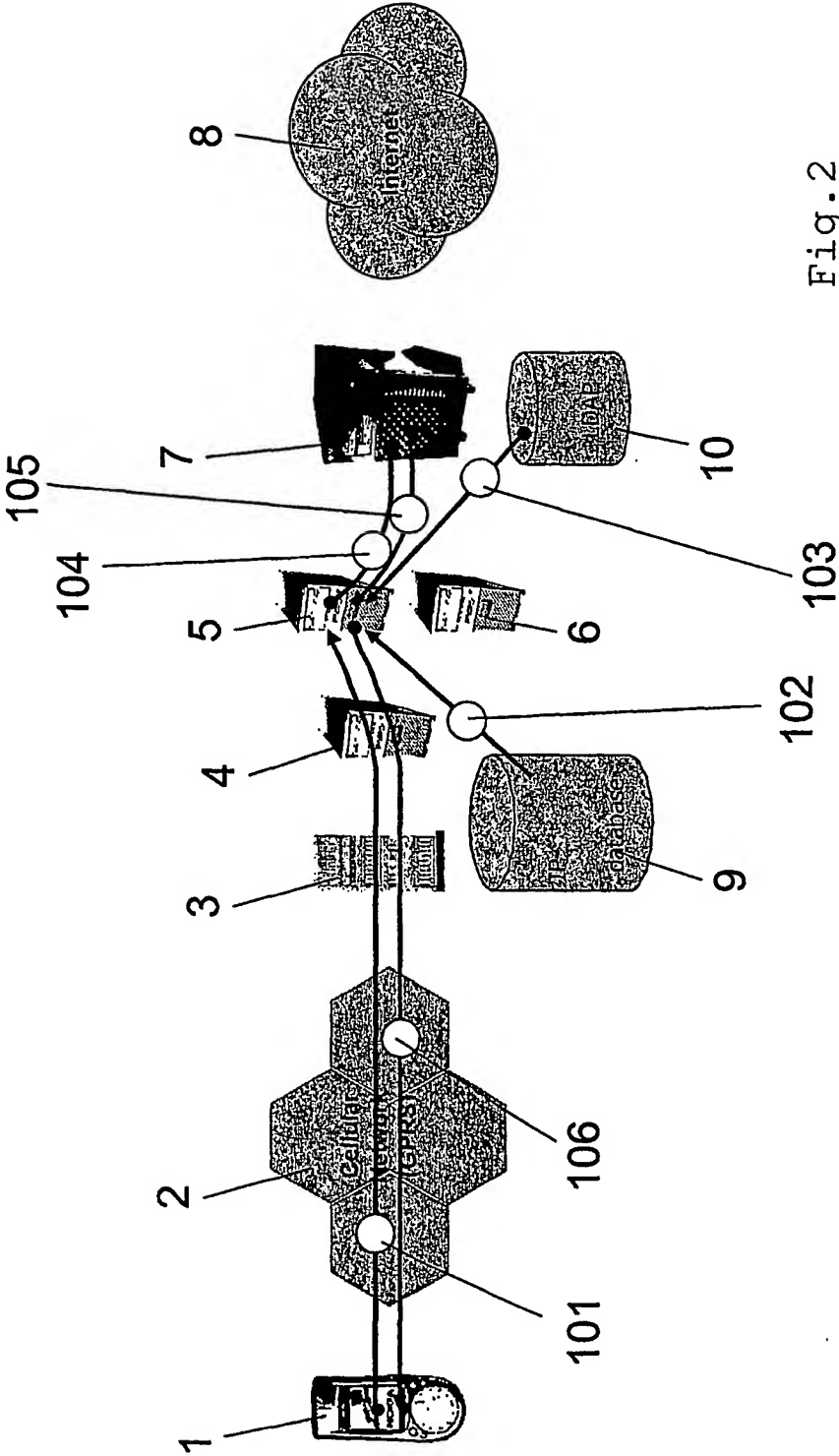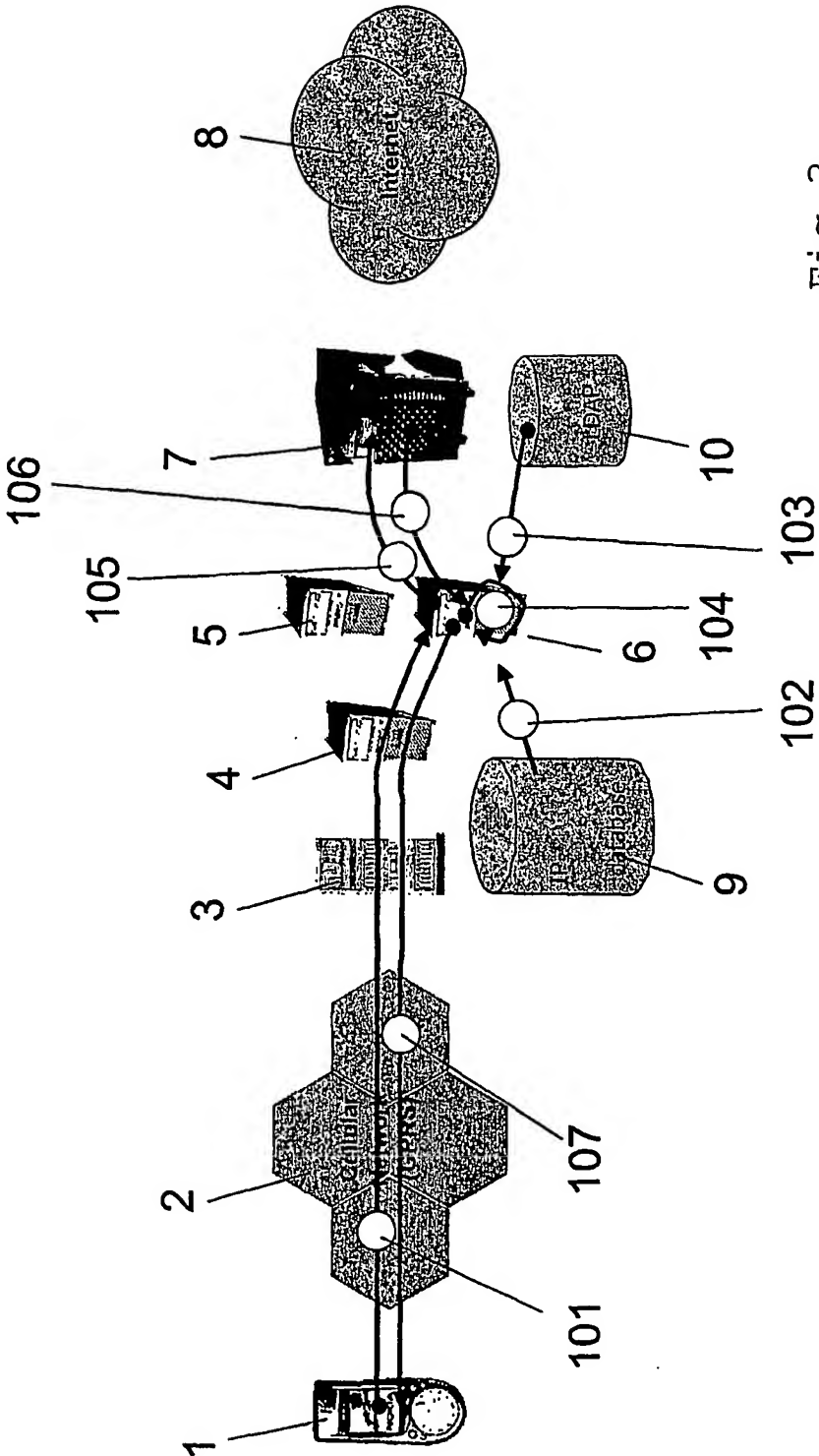
20

Fig.1

Fig.2

Fig. 3